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Ascension

DCMC PICU Sedation & Delirium Management

Step 1: Select Appropriate RASS GOAL

Richmond Agitation Sedation Scale (RASS)				Ok to assess for delirium with CAPD?	Appropriate to paralyze?
Score	Description				
+4	**Combative**	Violent, immediate danger to staff		Assess for delirium each shift with CAPD for RASS ≥ −3	No! Administer *sedation first* to target RASS −4
+3	**Very Agitated**	Pulls at or removes tubes, aggressive			
+2	**Agitated**	Frequent non-purposeful movements, fights ventilator			
+1	**Restless**	Anxious, apprehensive but movements not aggressive or vigorous			
0	**Alert & Calm**				
−1	**Drowsy**	Responds to VOICE	Not fully alert, sustained awakening to **voice** (eye opening & contact > 10 secs)		
−2	**Light Sedation**	Responds to VOICE	Briefly awakens (not sustained) to **voice** (eye opening <10 secs)		
−3	**Moderate Sedation**		Movement or eye-opening to **voice** (no eye contact)		
−4	**Deep Sedation**	Responds only to TOUCH	No response to voice, but movement or eye opening to **physical stimulation**	Do not assess for delirium with CAPD for RASS -4 or -5	Yes! If indicated, it would be appropriate to paralyze a patient who is RASS -4 or -5
−5	**Un-Arousable**	No response to voice or physical stimulation - paralysis			

Step 2: If RASS >/= -3: Complete CAPD Screen qShift

All patients admitted to ICU should be screened for delirium using CAPD each shift (0000, 1200)

→ **Preventative Non-Pharmacologic Measures** should be implemented for all patients

- CAPD >/= 9 is indicative of possible ICU delirium
  - Discuss score on daily rounds
  - Assess patient for the following using **BRAIN MAPS**
    - **Underlying Disease**
    - **Minimize Iatrogenic Causes**
    - **Optimize Environment**
  - Strong emphasis on **Non-Pharmacologic Measures**
    If No Resolution:
    Consider **Pharmacologic Therapy**
- CAPD < 9 is negative for delirium
  - Ensure **Preventative Non-Pharmacologic Measures** are implemented

Step 3: Assess BRAINMAPS & Manage Delirium

BRAINMAPS: Common Causes of Delirium [4]		
Potential Deliriogenic Factors		**Need to Address / Recommendations**
B	**B**ring Oxygen	Hypoxemia Low Cardiac Output Anemia
R	**R**emove/**R**educe Drugs	Anticholinergics (Diphenhydramine, Steroids, Opioids, BZD) Benzodiazepines Opioids
A	**A**tmosphere	**Sleep-wake cycle:** Lights on/off schedule, Noise reduction, **Provide Familiarity:** Caregiver presence, Photos, Toys, Books ↓ **Confusion:** Glasses, hearing aids, Communication tools ↑ **Rest:** Cluster care, Minimize overnight interventions **Minimize Fear:** Utilize Child Life
I	**I**nfection/ **I**mmobilization/ **I**nflammation	Infectious Workup Early Mobilization
N	**N**ew Organ Dysfunction	Assess: CNS, CV, Pulm, Hepatic, Renal, Endocrine
M	**M**etabolic Disturbance	Assess: CMP, Blood Gas
A	**A**wake	Normalize sleep/wake cycles
P	**P**ain	Treat pain appropriately - assess for under or over treatment
S	**S**edation	Lighten sedation goals Avoid benzodiazepines as much as possible

Non Pharmacologic Prevention & Management of Delirium

1. **Initiate Early PT/ OT**
2. **Normalize Sleep/ Wake Cycle:** Create Lights on/off schedule, Noise reduction
3. **Provide Familiarity:** Caregiver presence, Photos, Toys, Books
4. **Decrease Confusion:** Glasses, hearing aids, communication tools
5. **Increase Rest:** Cluster care, minimize overnight interventions
6. **Minimize Fear:** Engage family in soothing, Utilize Child Life Services
7. **Family Engagement:** help promote sleep - mimic home sleep routine, quiet room, soothing music, turn off lights/TV at night/during nap time, earmuffs for infants

Pharmacologic Treatment of ICU Delirium

- Consider for delirium persistent after strict non-pharm
- Drug Class of Choice: **Atypical antipsychotics**
- Always use the **lowest effective dose** avoid risk of adverse effects associated with antipsychotics (metabolic, extrapyramidal, cardiac)
- **Risperidone** is PO drug of choice (see reverse for DOSING)
  - Liquid formulation and ease of dose titration
  - Lowest risk of QTc prolongation
- IM Olanzapine or IV haloperidol may be considered for emergencies only
- **Assess baseline QTc & repeat q48-72 hrs after initiation or increase**
- Dose should not be changed more frequently than every 48 hours
- If pharmacologic therapy was not beneficial, discontinue therapy and further optimize non-pharm measures, minimize iatrogenesis
- **Assess ability to discontinue pharmacologic therapy after 5-7 days**

Risperidone Oral Liquid[5,6]		
Weight	Initial Dose	Dose Change Increment
2.5-5 kg	0.1 mg qHS	0.1 mg BID, Max = 0.15 mg BID
5.1-10 kg	0.2 mg qHS	0.2 mg BID, Max = 0.25 mg BID
10.1-20 kg	0.3 mg qHS	0.3 mg BID, Max = 0.4 mg BID
20.1-40 kg	0.4 mg qHS	0.4 mg BID, Max = 0.8 mg BID
≥ 40.1 kg	0.5 mg qHS	0.5 mg BID, Max = 1 mg BID

- < 20 kg: Doses > 1mg/day not associated with added benefit
- ≥ 20kg: Doses >2.5 mg/day not associated with added benefit

Monitoring Risperidone for ICU Delirium

- Baseline QTc and every 72 hours
- CAPD Trend
- Extrapyramidal symptoms

Dose Titration for Risperidone for ICU Delirium

- No more frequent than q48h increases
- May increase for no change in CAPD/ delirium symptoms (See Dosing Table)
- Dose reduce for side effects (see Monitoring)
- Discontinue if no improvement in delirium with increased dosing
- Weaning may be done over 48-72 hours if on low dosage; consult pharmacy if on high dosage

References

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4. Smith HA, Brink E, Fuchs DC, Wesley E, Pandharipande PP. Pediatric Delirium - Monitoring and Management in the Pediatric Intensive Care Unit. Pediatr Clin North Am. 2013; 60(3): 741-760.
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6. Capino A, Thomas A, Baylor S et al. Antipsychotic Use in the Prevention and treatment of Intensive Care Unit Delirium in Pediatric Patients. *J Pediatr Pharmacol Ther.* 2020; 25 (2): 81-95.

Disclaimer: This is a guidance document, modifications may be made on a case by case basis

DCMC Delirium Algorithm adapted from CHOP and University of Missouri Women's and Children's Hospital's delirium protocols

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